Physical Review B 1995 vol.51 N14, pages 9199-9207

EPR study of the dynamic spin susceptibility in heavily doped YBa2Cu3O6+δ

Sichelschmidt J., Elschner B., Loidl A., Kochelaev B.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Electron paramagnetic resonance (EPR) studies on single crystals of YBa2Cu3O6+δ were performed in a wide range of oxygen concentration δ. Intrinsic EPR signals due to the existence of paramagnetic chain fragments could be detected only in a limited δ range (0. 7≤δ≤0.9). The linewidth of the signal passes through a minimum near 105 K and broadens exponentially for further decreasing temperatures. This behavior manifests the opening of a pseudogap in the dynamic spin susceptibility of the CuO2 planes. At higher temperatures the linewidth follows a Korringa behavior. The g values reveal axial symmetry with respect to the c axis [g=2.28(1); g=2.03(1)] and are almost temperature independent. We compare our results with inelastic neutron scattering and nuclear-magnetic-resonance data. © 1995 The American Physical Society.

http://dx.doi.org/10.1103/PhysRevB.51.9199